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SERVICE MANUAL

CDTV

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1.1 SPECIFICATIONS

CENTRAL PROCESSING UNIT

MC68000 (Motorola) 16/32 bit main CPU

CPU SPEED

7.15909 MHz (NTSC); 7.09379 MHz (PAL)

NOTE: CPU speeds can vary when using an external system clock such as with genlocking units.

CUSTOM CHIPS

3 Amiga-specific custom chips (Agnus, Paula and Denise) which enhance system performance by taking over tasks such as handling video, sound, direct memory access (DMA) and/or graphics.

OTHER CUSTOM CHIPS

CDTV will also have other custom chips for handling the CD-ROM interface and IR control.

MEMORY

1 MB (Megabyte) chip RAM; 2K non-volatile RAM reserved for system (clock, prefs, etc.); 512K ROM

INTERNAL SLOTS

Intelligent video slot (for optional genlock, RF board, etc.) 15 pin edge connector; DMA slot — for SCSI, LAN, etc.

VIDEO OUTPUTS

Analog RGB, Digital RGB (DB-23 connector); Composite video NTSC or PAL (RCA connector); Component video Y-C (S connector type for S-VHS and Hi8); RF Modulated (F connector); Optional genlock capabilities via plug-in module. Three-mode (CDTV, video source or mixed) under software control.

VIDEO DISPLAY (GENERAL)

400 lines/vertical frequency 60Hz (NTSC); 512 lines/vertical frequency 50Hz (PAL); Graphic co-processor with beam synced draw, fill and move modes (blitter); Maximum 1Mb video memory (chip memory); Palette of 4096 colors; Maximum 6 bitplanes; 8 sprites per scanline

OPERATING SYSTEM

Amiga kickstart 1.3 in ROM; ISO 9660 file system handler; High-speed decompression for graphics, audio and other data; CD + G, CD + midi, CDDA support

IR (INFRARED) REMOTE UNIT SPECS

Landscape format

Proprietary high-speed IR signal; Power supplied by 2 AA batteries; 10 numeric keys plus Escape and Enter; Joy/Mouse, CD/TV and Genlock keys; Button for Up, Down, Left, Right and diagonal movement; Two Select (or Fire) keys: A and B; CD audio — Reverse, Forward, Play/Pause, Headphone Volume Up-Down and Stop keys

OPTIONAL ACCESSORIES

External floppy disk drive; Trackball; Personal RAM or ROM card; Genlock; Keyboard; Modem

ADDED RAW KEYBOARD CODES

6C Play/Pause; 6D Stop; 6E Fast Forward; 6F Fast Reverse

MEMORY MAP (IN ADDITION TO IM CHIP A500)

Memory Card	\$E00000-\$E000FF
Non-volatile Memory	\$DC8000
DMAC	Auto config., typically \$E90000
Tri-port	Mapped to DMAC, \$B0

COMPUTER GENERATED AUDIO SPECS

4 independent sound channels (right and left); Complex waveforms; Sound buffer up to 128K, unlimited seamless sound; 8-bit D/A converter plus 6-bit volume control

AUDIO EXTRAS

Capable of sound mapping Amiga over CD-DA sound.

1.1 SPECIFICATIONS (Continued)**REAR PORTS**

Centronics parallel interface; RS-232 serial interface; External floppy disk drive interface (Amiga floppy disk drive compatible); Hardwired alternative to IR for keyboard, mouse, joystick; 2 audio output ports (RCA type plug) (requires external audio amplifier); Midi in and out

FRONT PORT

Stereo headphone jack; Port for optional personal RAM/ROM card (256K)

POWER CONSUMPTION

50W (average AC100-240V, 50/60Hz)

ENVIRONMENTAL CONDITIONS

Operating temperature 5C to 40C (non-condensing); 41F to 104F
Operating humidity 25% to 80% (non-condensing)

FRONT PANEL DISPLAY

Fluorescent (white characters on black); Time, track and volume level; Clock remains lit when unit is turned off; Display controllable by application

FRONT PANEL CONTROLS

Power On/Off; Headphone volume Up/Down; Play/Pause; Stop; Forward/Reverse — Scan/Skip; CD/TV; Reset

TEXT MODES

80 characters/25 lines; 60 characters/25 lines; Various font sizes and types selectable; Screen colors user definable

GRAPHICS MODES**(NTSC)**

320 X 200 non-interlaced 32 colors
640 X 200 non-interlaced 16 colors
320 X 400 interlaced 32 colors
640 X 400 interlaced 16 colors
plus overscan and HAM modes

(PAL)

320 X 256 non-interlaced 32 colors
640 X 256 non-interlaced 16 colors
320 X 512 interlaced 32 colors
640 X 512 interlaced 16 colors
plus overscan, HAM, etc.

CD-ROM DRIVE SPECS

Sony/Philips type CD-ROM standard Mode 1, Mode 2

Data readout from disk 153 Kbytes/sec (Mode 1); 171 Kbytes/sec (Mode 2); 2 Megabytes/sec (burst)
Average access time 0.5 sec
Maximum access time 0.8 sec
Soft read error Less than 10e-9
Hard read error Less than 10e-12
Seek error Less than 10e-6
Commands CD-ROM, CD-Audio, CD + G
MTBF 10,000 P.O.H.
Standard supported ISO-9660
Data Capacity 540 MegaBytes (approx.) (about 700 Amiga floppy disks)

CD AUDIO SPECS

8X oversampling

Audio output External 1.4VRMS, 10K OHM
Frequency response 4-20KHz
Signal/Noise - 92DB
Channel Separation - 85DB
Harmonic Distortion 0.02% at 1 KHz
Maximum audio capacity about 28 hours - AM quality
Sample Rates variable from CD Audio rate (44KHz) to 6KHz
Dual 16 bit D/A converter plus 64 levels of attenuation

Commodore International Spare Parts List SHIPPING ASSEMBLIES

Commodore part numbers are provided for reference only and do not indicate the availability of spare parts from Commodore. Industry standard parts (Resistors, Capacitors, Connectors) should be secured locally. Part number information may vary according to country, some parts may not be available in all countries. Part Numbers are subject to change, see Parts (Section 2) of current Techtopics for current numbers.

CDTV SHIPPING ASSY	CDTV SHIPPING ASSY (Continued)
513402-01 US	363713-02 MODULATOR, CDTV PAL
513402-02 CN	363713-01 MODULATOR, CDTV NTSC
513402-03 U.K.	903508-07 CORD, POWER BSI BLACK
513402-04 GR	903508-18 CORD, POWER UL/CSA BLACK
513402-05 NOT USED, USE -04	903508-01 CORD, POWER VDE BLACK
513402-06 IT	903508-02 CORD, POWER SEV BLACK
513402-07 NOT USED, USE -06	903508-03 CORD, POWER SAA BLACK
513402-08 SG	903508-10 CORD, POWER JP BLACK
513402-09 NOT USED, USE -06	308075-01 AUTO RF SWITCH BOX NTSC
513402-10 NOT USED, USE -06	251846-01 CABLE, RF PAL
513402-11 NOT USED, USE -06	325228-01 RF SWITCH SD
513402-12 SD	252590-01 CO CADDY
513402-13 NOT USED, USE -08	252594-01 REMOTE CONTROLLER CDTV
513402-14 NOT USED, USE -06	252592-01 BOX, INDIVIDUAL CDTV
513402-15 NOT USED, USE -06	252593-01 CARTON, OUTER CDTV
513402-16 NOT USED, USE -06	252649-01 BOX, ACCESSORY
513402-17 NOT USED, USE -06	252595-01 FOAM, PACKING - FRONT
513402-18 AL	252596-01 FOAM, PACKING - REAR
513402-19 NOT USED, USE -06	311945-01 CABLE AUDIO
513402-20 NOT USED, USE -06	408007-01 SVC SUB ASSY
513402-21 JP	318882-01 CARD, WARRANTY, CN
366082-02 GUIDE, QUICK CONNECT	368014-01 CARD, WARRANTY, AL
250802-01 MAIN ASSY CDA-1, NTSC	320408-04 BAG, FLAT 650MM X 650MM FOR CDTV
250802-02 MAIN ASSY CDA-1, PAL-I	324257-01 BAG, DRYING AGENT
250802-04 MAIN ASSY CDA-1, PAL-G	367669-01 DISK ASSY — CD WELCOME DISK

Commodore International Spare Parts List

MAJOR ASSEMBLIES

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250802	MAIN ASSY CDTV	250805-01	REAR PANEL ASSY CDTV
250802-01	NTSC	252549-01	PANEL REAR CDTV
250802-02	PAL-I	325552-06	CONN POWER FILTER
250802-03	SECAM	252551-01	FAN
250802-04	PAL-3	252631-01	GASKET FAN
250802-05	BLANK CARD	252552-01	METAL COVER SCSI SLOT W/O CARD
250802-06	SCART	252540-01	HARNESS ASSY FAN
250803-01	BOTTOM CHASSIS ASSY CDTV NTSC	252553-01	HARNESS ASSY AC INPUT
250803-02	BOTTOM CHASSIS ASSY CDTV PAL	905476-04	TUBING HEAT SHRINKABLE 4 DIA X 40 L
250507-01	LABEL, RATING CDTV	1540010-04	GROUND CABLE ASSY GREEN/YELLOW
366567-01	LABEL, SERIAL #	906800-11	SCREW PH M3 X .35 BLACK
366565-01	LABEL, LASER CAUTION	906800-05	SCREW PH M3 X .5 BLACK
325090-02	SEAL, WARRANTY	905950-03	NUT HEXAGON M3
366566-01	LABEL, DISK CAUTION	906805-01	SCREW STP FLAT HEAD M3 X .6 BLACK
252665-01	INSULATION SHEET, FLASH MEMORY	907272-03	FLAT WASHER M3
252367-01	COVER, TOP CDTV		
252651-01	VIDEO CARD, NTSC	250807-01	FRONT BEZEL ASSY CDTV
390891-01	VIDEO CARD, PAL FOR 250802-02 SET SW TO PAL-I	252556-01	FRONT BEZEL CDTV
390932-01	VIDEO CARD, SECAM FOR 250802-04 SET SW TO PAL-G ON VIDEO CARD 390891-01	252567-01	DOOR CADDY CORDOM DRIVE
363714-01	VIDEO SCART CARD	252558-01	SPRING DOOR CADDY
906883-03	SCREW, SELF TAPPING PAN HEAD M3 X .6 (QTY = 2)	252569-01	PLASTIC FILTER FL DISPLAY
252466-02	SCREW, SELF TAPPING BIND HEAD M4 X .6 (QTY = 4)	250481-01	PCB ASSY POWER SW & PHONE JACK
906800-05	SCREW, PAN HEAD M3 X .5 (QTY = 2)	252571-01	DOOR MEMORY CARD
		252572-01	LENS PLASTIC LED
250803	BOTTOM CHASSIS ASSY CDTV (-01 - NTSC; -02 - PAL-I)	252573-01	BUTTON POWER SWITCH
250804-01	COROM MECHANISM ASSY CDTV	252574-01	PLASTIC SWITCH UNIT
250482-01	PCB ASSY MEMORY CARD	250483-01	PCB ASSY LED INDICATOR GREEN
252583-01	BOTTOM CHASSIS CDTV	250669-01	FLEXIBLE BUSING
250806-01	POWER SUPPLY ASSY CDTV	252666-01	HOLDER FRONT BEZEL
252584-01	BRACKET METAL, REG MKE TOP	252668-01	NYLON WASHER
252584-01	FOOT CDTV W/O STAMP	906115-01	TOROID
252585-01	FOOT RUBBER CDTV	252570-01	PLATE LOGO COMMODORE
252835-01	RUBBER BUSHING	250479-01	PCB ASSY DISPLAY CDTV
252641-01	CABLE TIE	252630-01	PLASTIC PCB HOLDER SW AND PHONE JACK
250484-01	PCB ASSY MAIN LOGIC CDTV NTSC	906885-01	SCREW STP PH M2 .5 X 8
250484-02	PCB ASSY MAIN LOGIC CDTV PAL	906883-01	SCREW STP PH M3 X 8
250485-01	PCB ASSY MIDI INTERFACE	906883-04	SCREW STP PH M3 X 10
250805-01	REAR PANEL ASSY CDTV		
250807-01	FRONT BEZEL ASSY CDTV	250485-01	PCB ASSY MIDI INTERFACE
390918-01	HOLDER BOTTOM CHASSIS	252625-01	SCHEMATIC MIDI INTERFACE
906883-03	SCREW PAN HEAD M3 X .6	252626-01	PCB MIDI INTERFACE
906883-04	SCREW PAN HEAD M3 X 10	252166-03	CONN 5 PIN DIN
390903-01	SCREW ST PH M3 X .6 BLACK	252664-01	PCB HOLDER PLASTIC
251449-02	SCREW ST PH M4 X .8	252628-01	HARNESS ASSY MIDI INTERFACE
251541-04	SPRING WASHER M4	250483	PCB ASSY LED INDICATOR (-01 - GREEN; -02 - AMBER)
906565-04	LOCK WASHER EXT TOOTH M4	252598-01	PCB LED INDICATOR
906883-01	SCREW ST PH M3 X 8	325521-07	LED GREEN 5 DIA ROHM
906885-02	SCREW ST M2 X 2 X 6	325521-04	LED GREEN 5 DIA SHARP
906670-03	SCREW M2 X 2 X 6	252621-02	LED AMBER 5 DIA ROHM SLV 56YC
		252621-01	LED AMBER 5 DIA SHARP
250806-01	POWER SUPPLY ASSY CDTV	252582-02	HARNESS ASSY 2 CONDUCTOR
252560-01	REGULATOR SWITCHING MKE		
252562-01	BRACKET METAL, REG MKE BOTTOM	250481-01	PCB ASSY POWER SWITCH AND PHONE JACK
252632-01	SHEET INSULATION POWER SUPPLY	252578-01	PCB POWER SW AND PHONE JACK
252636-01	HARNESS ASSY POWER MKE	252579-01	HEADPHONE JACK 6.35 DIA PC MOUNT TANAKA ELEC
252637-01	HARNESS ASSY CORDOM POWER	252580-01	SWITCH POWER PC MOUNT EXCELL ELEC
252638-01	HARNESS ASSY POWER SWITCH	252581-01	HARNESS ASSY SHIELDED 2 CONDUCTORS
906885-02	SCREW STP PH M2 .5 X 6	252582-01	HARNESS ASSY 2 CONDUCTORS
907272-07	WASHER FLAT M2 .6	252629-01	PLATE GROUND SW AND PHONE JACK
251541-07	WASHER SPRING M2 .6	250482-01	PCB ASSY MEMORY CARD
250804-01	COROM MECHANISM ASSY CDTV	252575-01	PCB MEMORY CARD
252564-01	COROM MECHANISM CRS11-B MKE	252576-01	HARNESS ASSY FLAT CABLE 40 PIN
252555-01	METAL BRACKET HOLDER MAIN LOGIC	252577-01	CONN MEMORY CARD ITT CANNON
252557-01	PLASTIC GUIDE OPTION CARD	252645-01	COPPER TAPE 15MM WIDTH
252576-02	HARNESS ASSY 40 PIN FLAT CABLE	250479-01	PCB ASSY DISPLAY CDTV
252639-01	HARNESS ASSY AUDIO CONTROL	252537-01	SCHEMATIC DISPLAY CDTV
906883-01	SCREW STP PH M3 X .8	252642-01	PCB DISPLAY CDTV
252634-01	STAND OFF LOGIC PCB (TO BE PRESSED BY MFG)	252538-01	PCB DISPLAY CDTV
252556-01	BUTTON EJECT CR 5118 MKE	252539-01	IR RECEIVER MODULE SHARP
252667-01	HOLDER INSULATION SHEET	252646-01	RUBBER DISPLAY T-5
		252540-01	FL DISPLAY CPT2423A NORITAKE
250486-01	PCB ASSY, FLASH MEMORY	250484	PCB ASSY MAIN LOGIC CDTV (-01 - NTSC; -02 - PAL)
252658-01	SCHEMATIC FLASH MEMORY FROM AER	252664-01	PCB FAB MAIN LOGIC CDTV
252659-01	PCB FLASH MEMORY		

Commodore International Spare Parts List

PCB Components

PCB Assembly CDTV

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IC COMPONENTS			CONNECTORS (Continued)		
390084-03	68000 CPU 6MHz	U51	390851-02	DIN MINI 4 PIN	CN8
318072-01	GARY 5917	U12	900345-20	HEADER ASSY 40 PIN 2.54 PITCH	CN9,13
252126-02	DENISE 8362R8	U8	252616-03	HEADER ASSY 3 PIN 2 PITCH	CN17,18,25
252127-02	PAULA 8364R7	U4	252616-02	HEADER ASSY 2 PIN 2 PITCH	CN19,23,24
315093-02	ROM KICKSTART V1.3	U13	250669-04	HEADER ASSY 4 PIN 2.5 PITCH	CN21,22
318029-03	CIA 8520 A-1 2 MHz	U9,10	250669-02	HEADER ASSY 2 PIN 2.5 PITCH	CN20
390229-01	VIDEO WBRHD	HY1	252616-04	HEADER ASSY 4 PIN 2 PITCH	CN27
318099-01	DRAM 256K X 4 100NS ZIP	U65-72	900332-02	HEADER ASSY 2 PIN 2.54 PITCH	JP15
318099-05	DRAM 256K X 4 80NS ZIP	SUB FOR 318099-01	380333-01	JUMPER	
318069-02	F. AGNUS 8372	U44	OSCILLATORS, TRANSISTORS AND DIODES		
390563-02	DMAC 4701	U36	325566-14	OSCILLATOR MODULE 28 63636 MHZ	X1
252568-01	ROM CROM DRIVER, ODD	U35	252344-01	OSCILLATOR MODULE 28 37516 MHZ	X5
252567-01	ROM CROM DRIVER, EVEN	U34	325566-12	OSCILLATOR MODULE 28 63636 MHZ	X1
252568-01	CPU LC6554H	U62	902707-01	TRANSISTOR PNP 2N0906	O4,6
252609-02	CPU 65001	U75	390192-01	TRANSISTOR NPN 2N3904	Q1,7,9,10,12,13
318073-01	RTC MSM6242B	U61	252338-01	TRANSISTOR POWER 2SD789	Q8
252611-01	AMP M51586FP	U16	390254-01	TRANSISTOR JFET MPF102	Q5
252612-01	ATT TC9154AP	U19	902723-02	TRANSISTOR 2SA130DA	Q1
901923-01	TIMER NE555	U76	902717-01	TRANSISTOR 2SA1733	SUB FOR ABOVE
390086-01	AMP TL064LF347	U5,6	902707-01	TRANSISTOR 2N3906	SUB FOR ABOVE
901523-10	AMP TL062LF353N	U18	900528-02	DIODE ZENER 5.1V RD 5.1EB	D4
901879-03	TRI-PORT 6525B	U32	900822-02	DIODE ZENER 30V RD 30EB	D3
252614-01	DAC LC7883M	U17	900850-09	DIODE SIGNAL 1N4446C	D5
252156-02	RESET PS7518B	U56,82	900850-01	DIODE SIGNAL 1N4148	D1,5-9
252620-01	SRAM 16K 5K DIP 100NS	SUB FOR -01	252618-01	OSCILLATOR CERAMIC 3MHZ	X3
252620-02	SRAM 16K 5K DIP 120NS	SUB FOR -01	252618-02	OSCILLATOR CERAMIC 4MHZ	X4
252620-03	SRAM 16K 5K SIP 150NS	U46,48	900560-01	OSCILLATOR CRYSTAL 32.768 KHZ	X2
901521-29	74LS373	U49,50	RESISTOR PACKS		
901521-16	74LS138	U54,55	252657-01	5 COM 82K 9 ELEMENT	RP23,24
318050-01	74F244	U7	902441-17	5 COM 470 OHM 5 ELEMENT	RP13
901521-11	74LS157	U1	902410-06	5 COM 14.7K 9 ELEMENT	RP2,3,10,26
310003-01	74HC245	U1,2	902411-10	5 COM 120 OHM 5 ELEMENT	RP5
901882-01	1488	U3	902410-13	5 COM 10K 9 ELEMENT	RP6
901883-01	1489	U11	902410-09	5 COM 3.3K 9 ELEMENT	RP11,25
901521-28	74LS154	U31	252647-02	5 COM 47K 3 ELEMENT	RP8
901521-52	74LS223	U42	902442-55	5 COM 4.7K 7 ELEMENT	RP12,14,21
901521-06	74LS74	U24,28	902441-31	5 COM 4.7K 5 ELEMENT	RP7
901101-01	74F04	U14	902422-04	INDIVIDUAL 22 OHM 4 ELEMENT	RP4
901521-46	74LS245	U52,53	902422-06	INDIVIDUAL 68 OHM 4 ELEMENT	RP4
901521-38	74LS38	U15	902422-05	INDIVIDUAL 47 OHM 4 ELEMENT	RP1,2
901521-31	74LS32	U22,25,39,73	902227-05	INDIVIDUAL 68 OHM 3 ELEMENT	RP15,29,30
901521-03	74LS08	U21,80	252648-01	INDIVIDUAL 68 OHM 3 ELEMENT	RP21
901522-30	7407	U27,37	902422-06	INDIVIDUAL 1K 4 ELEMENT	RP33
201521-22	74LS27	U41,43,64	252648-02	INDIVIDUAL 1K 3 ELEMENT	RP32
901521-02	74LS04	U26,40,63,68	RESISTORS — 1%W ± 5% UNLESS OTHERWISE SPECIFIED		
901521-21	74LS02	U23,30,74	390904-25	1M	RP96,115
901521-01	74LS00	U29,81	390904-24	470K	R22,25
901521-13	74LS244	U45,47,57,59,60,77	390904-23	100K	R51,67,68
901521-01	74F00	U38	390904-22	47K	R92
IC SOCKETS			390904-20	15K	R53,60,20,30
390185-01	84 PIN PLCC	XL36,44	390904-19	12K	R52,54,59,61,18,28
900141-01	64 PIN SMD	XL52	390904-18	10K	R4,5,12,14,16,17,23,26,27,54,59,90,125,136,143
904150-10	64 PIN DIP	XL51	390904-17	4.7K	R1,39,41,45,55,57,62,63,77,84,86,117,119,123,125,126,134,140
251313-02	48 PIN DIP	XL4,8,12	390904-16	3.3K	R19,29,79,105,106
904150-06	40 PIN DIP	XL9,10,13,32,75	390904-14	1.5K	R66,100
390768-02	32 PIN DIP MCH TOOL	XL34,35	390904-13	1K	R7,8,46,76,84,95,97,128,133,137
252600-01	HOLDER CONN CARTRIDGE		390904-12	750 OHM	R15,24
200966-02	TRANSFORMER DC-DC CONV	T1	390904-05	33 OHM	R88
CONNECTORS			390904-10	120 OHM	R46
390851-03	DIN MINI 5PIN	CN7	390904-07	56 OHM	R78
390242-03	D SUB 23 PIN MALE	CN4	390904-09	100 OHM	R50,55
390241-03	D SUB 23 PIN FEMALE	CN1	390904-06	47 OHM	R36,37,96
390242-05	D SUB 25 PIN MALE	CN2	390904-04	27 OHM	R42,44
390241-05	D SUB 25 PIN FEMALE	CN3	390904-03	2.7K	R47
252622-01	CARD EDGE 30 PIN 2.54 PITCH	CN10,11	390904-02	22 OHM	
252617-11	KEL 9811 SERIES 170L	CN12			
252603-10	HOUSING MOLEX 52007	CN14,15,16			
252122-02	RCA JACK RED	CN6			
252122-01	RCA JACK WHITE	CN5			

Commodore International Spare Parts List

PCB Components (Continued)

PCB Assembly CDTV

RESISTORS (Continued)		CAPACITORS (Continued)			
390904-02	10 OHM	R69,70	900463-28	MLC AXIAL .01UF	C15,74,154
390904-01	4.7 OHM	R2	900019-07	MLC AXIAL .047UF	C7,16,31-34,63
390904-11	470 OHM	R40,42,49,63,111,112	900463-26	MLC AXIAL .6800PF	C10,19
390904-21	22K	R58,121,124,127	900463-23	MLC AXIAL .3900PF	C9,18,56,57
901600-15	47 OHM, 1/4W ± 5%	R3,101,102	900463-37	MLC AXIAL .1UF	C65,91,124,134,150,161,179
901600-52	33 OHM, 1/4W ± 5%	R114			C135
901550-07	100K	R82	900010-42	CER DISCS 22PF	C131,132
901550-07	12K	R71	900010-64	CER DISCS 33PF	C126,128
901550-20	10K	R85,103,104	900010-35	CER DISCS 10PF	C86
901550-19	4.7K	R73,75,91,93,99,107,108,116,141	900010-23	CER DISCS 680PF	C1,2
			900100-33	ELECT 47UF 16V	C3
901550-02	3.3K	R72	900010-61	CER RAD 0.1UF 25V	C50,55
901550-01	1K	R1,38,142	900463-10	MLC AXIAL .330 PF	C169,170
901550-94	68 OHM	R80	900463-12	MLC AXIAL .470PF	C45,47,49,51
901550-56	47 OHM	R38,109	900463-16	MLC AXIAL .001UF	C48,52
901550-63	22 OHM	R81,87	900019-17	MLC RAD 47PF 50V	C92
901550-133	4.7 OHM	R6	900022-05	MLC RAD .33UF 50V	C78
901550-58	470 OHM	R94	900100-58	ELECT RAD 470UF 10V	C174
901550-62	220 OHM	R21,31	900100-59	ELECT RAD 4.7UF 25V	C136
901550-06	33K	R120,122	251029-06	TRIMMER 6.8 - 45PF	
RESISTORS — 1/4W 5%, CARBON		MISCELLANEOUS			
901550-02	3.3K	R1	312754-02	INSULATION TAPE	
901550-89	150 OHM	R2	905476-05	TUBING SHRINKABLE 3 X 20L	
901550-105	33 OHM	R3	251564-15	WRAPPING WIRE AWG 28 L = 20MM	
901550-58	470 OHM	R4	251842-02	EMI FILTER 100PF	EM19,53,55,60,50,75,80,83,87,92,95,104,107,108,81,71,72,81,82,EM45,56,59,74,90,91,FB1,2,3,EM11,2,3,4
901550-56	47 OHM	R5	390297-02	EMI FILTER 100PF W/FERRITE	
901550-52	220 OHM	R1,2,3	900325-01	FERRITE BEAD	
901550-76	270 OHM	R4	900325-01	FERRITE BEAD	
CAPACITORS			251842-02	EMI FILTER 100PF	EM11,2,3,4
390101-04	ELECT RAD 22UF 35V	C11,20,29,59,60,79,80,177,178	252627-01	PHOTOCOUPLER PC900V	PC1
900100-34	ELECT RAD 10UF 50V	C14,85,155,162,163	252541-01	TACT SWITCH (USE W252642-01) HOSHIDEN	
900100-57	ELECT RAD 3300UF 10V	C2,61,68	252644-01	TACT SWITCH (USE W252538-01) ALPS	
900100-33	ELECT RAD 47UF 16V	C82,23,164	252547-01	LED AMBER 1 X 5 SHARP	LED 1
390101-02	ELECT RAD 100UF 16V	C5,40,42,72,81,84,125,165,173,175	252621-02	LED AMBER 5 DIA ROHM	LED 2,3
900100-48	ELECT RAD 47UF 50V	C152	252621-01	LED AMBER 5 DIA SHARP	SUB FOR ABOVE
390101-03	ELECT RAD 470UF 16V	C54,68,77	252548-01	HOLDER LED (USE W252547-01)	
900100-11	ELECT RAD 4.7UF 25V	C171,172,176	252542-01	WIRE FLAT JUMPER 2 MM PITCH 10 CONDUCTS L = 100	
900022-01	MLC RAD .22UF 50V	C3,4,8,12,13,17,21,22,58,71,73,75,78,119,140,147,164,5	252542-02	WIRE FLAT JUMPER 2 MM PITCH 10 CONDUCTS L = 100	
900022-03	MLC RAD .1UF 50V	C157,153	251188-03	COIL INDUCTOR 100UH	
900463-04	MLC AXIAL 100PF	C1,36,37,38,118	252599-01	SHIELD PLATE LOGIC PCB	
900082-05	MLC AXIAL .22UF	C5,24-28,30,35,39,64,66,67,70,83,87,90,93,117,120,123,127,129,130,133,137,139,144,149,156,158,159,167,180,183	252601-01	INSULATION SHEET LOGIC PCB	
			390879-01	STAND OFF M2.5 X 0.45 X 13 (SUB USE W250486-01)	
			906883-01	SCREW SELF TAPPING PAN HEAD M3 X 8 (QTY 4)	
			906883-07	SCREW SELF TAPPING PAN HEAD M3 X 16 (QTY 4)	
			318277-17	POLYFOAM BLOCK	SUB FOR ABOVE L1

SIGNAL	DESCRIPTION
2MHz	26.63333 MHz/20.7514 MHz (PAL) Master Clock
2MHz	2 MHz Processor Clock
A[23:1]	Processor Address (68000)
ACK	Data Acknowledge (Parallel)
AS	Address Strobe (68000)
AUDIN	Audio Input (R3232 Jack)
AUDOUT	Audio Output (R3232 Jack)
BUS1	Bus Error (68000)
BUS	Bus Grant (68000)
BUSACK	Bus Grant Acknowledge (68000)
BLISS	Blitter Slowdown (chips)
BLIT	Chip Memory Access (chips)
BS	Bus Request (68000)
BUSY	Device Busy (parallel)
CASL/CASU	CAS Lower/Upper byte (DRAM)
CCR	Color Clock aka C1 (chips)
CCRO	Color Clock Quadrature aka C3 (chips)
CCNC	2 MHz Quadrature Clock
CNS	Media Change (floppy)
CLKR/CLKW	Real-time Clock Read/Write
CSYNC	Composite Sync (video)
CS	Clear to Send (rs232)
D[15:0]	Processor Data (68000)
D[31:0]	Direction (floppy)
DRD	Diskette Read Data (floppy)
DRWB	Diskette Write Data (floppy)
DRWB	Diskette Write Enable (floppy)
DRAL	Chip DRAM Request (chips)
DRAR[0]	DRAM Address (DRAM, chips)
DR[15:0]	DRAM Data (DRAM, chips)
DSX	Data Set Ready (rs232)
DTACK	Data Transfer Acknowledge (68000)
DTX	Data Terminal Ready (rs232)
E	Peripheral E Clock (68000)
EXAM	Expansion Memory Present
FC[0:6]	Function Control (68000)
FLK[0:7][K]	File Button (joysticks)
HLY	Processor Halt (68000)
HSYNC	Horizontal Sync (video)
INDEX	Diskette Index Hole (floppy)
INT[2:1,K]	Interrupt Requests (chips)
IOPLS[0]	I/O Data
IPL[2:1]	Processor Interrupt Requests (68000)
KBLCK	Keyboard Clock (keyboard)
KBDATA	Keyboard Data (keyboard)
KBPXSKT	Keyboard Reset (keyboard)
LD[0:0]	Upper/Lower Data Strobe (68000)
LED	Power On LED

SIGNAL	DESCRIPTION
LEFT/RIGHT	Audio Channels
NHS	Motor 56 (floppy)
NHSO	Motor 56 Drive (floppy)
NRV/REH	House Quadrature Signals (joysticks)
NRV/REH	House Quadrature Signals (joysticks)
OVL	Overlay ROM over RAM
OVK	Overlay System Decoding
P1KELRN	Pixel Clock (video)
POTIX/POTIV	Pot Lines (joysticks)
POTIX/POTIV	Pot Lines (joysticks)
POUT	Paper Out (parallel)
PPD[7:0]	Parallel Port Data (parallel)
RAEN	RAM Enable (chips)
RECEN	Chip Receiver Enable (chips)
RASE/RASI	RAS Internal/Expansion Lines (DRAM)
RDY	Drive Ready (floppy)
RECEP	General Reset
REGA[0:1]	Register Address Bus (chips)
RI	Ring Indicate (rs232)
ROMEN	ROM Enable
R[0]	Request to Send (rs232)
RST	Processor Reset (68000)
R[0]	Receive Data (rs232)
RW	Processor Read/Write (68000)
SEL	Select (parallel)
SEL[0:0]	Drive Select (floppy)
S[0:0]	Side Select (floppy)
STEP	Head Step Command (floppy)
TRAD	Track & Sense (floppy)
TXD	Transmit Data (rs232)
VRA	Vs.1d Memory Address (68000)
V[0:0]	Vs.1d Peripheral Address (68000)
V[0:0]	Vertical Sync (video)
WE	Write Enable (DRAM)
WPROY	Write Protect Sense (floppy)
XCLK	External 28 MHz Clock (genlock)
XCLKEN	External Clock Enable (genlock)
X[0:0]	External Data Ready
AUDL/AUDR	Audio Left/Right
ALMP	Audio Amplifier
ALPLY	CD Audio Play
AMS	Buffered Address Strobe
ASCK	CD Audio Clock
BSNEN/BSNCOO	Buffered Chip Select Memory Card Even/Odd
BSN	Buffered Processor Read/Write
DSN	Logic Voltage Sense
DSK	Buffered Data Strobe (rs232)
R[0:0]	Buffered Upper/Lower Data Strobe

SIGNAL	DESCRIPTION
CSIN	16MHz Bus Clock
CSAL/CSAR	CD Audio Left/Right
CDTV	Select CD/TV (see INCD)
CONFIN	Config In
CONFIGOUT	Config Out
CSOD	Chip Select CSORAM Driver
CSOR/CSOD	Chip Select CSORAM Driver Even/Odd
CSMC	Chip Select Memory Card
CSMCEN/CSMCOO	Chip Select Memory Card Even/Odd
CSNV	Non-Volatile Memory Select
CSNC	Real Time Chip Select
CSX0	AT Device Chip Select No. 0
DNCLAT	Attinator Data (bus)
DNCLCK	Attinator Latch (bus)
DNCLV	Attinator Stroke (bus)
DATA	CD Audio Data
DNCO	Disc Time Data
DDP,CSX	End of Process/AT Device Chip Select No. 1
CSM[0:0]	Genlock Mode Select (Remote Control)
IFPST	Interface Reset
IMC	Indicator Power/Status
INCD	Indicator CD/TV Mode
INRD	CD Drive Reset
INRS	ICSI Interrupt
IOK/IOV	Disc Read/Write
K[0:0]	Keyboard Sense
LASTE	Line Mute
LD[0:0]	Audio Left/Right Clock
MPN	Power Sense (logic)
MS[0:0]	Genlock Mode Select (Analog)
MUTE	CD Mute
PCWEN	Main Logic Power On/Off
SC[0:0]	Disc AT/SCSI Data
UCK	Attinator Data Clock (Head Phone)
UV[0:0]	Attinator Data Clock (Head Phone)
V[0:0]	Filament Voltage
VST	Attinator Data Clock (Head Phone)
V[0:0]	10V Voltage
VA,VA,XV,XV[2:1]	Mouse Input Signal
VSACK	AT Device Data Acknowledge
VSREQ	AT Device Data Requirement
ENC	ENABLE MEMORY CARD
ECB	ENABLE COMRAM DRIVER (DRAM)
W[0:0]	WRITE ENABLE E-PROH



















